iron, who held the first place in the Polytechnic School in 1871, and who has entered the School of Mines.

1871.

1. The Poncelet Prize, in Mechanics, to M. J. Boussinesq.
2. The Lalande Prize in Astronomy to M. Borelly for the Discovery of the Planet Lomia.
3. The Montyon Prize in Statistics to M. E. Cadet, for his work on "Marriage in France." Honourable mention was given to Dr. Ely for his work on "The Army and the Population."
4. The Jecker Prize in Chemistry to M. Schutzemberger for his works on Organic Chemistry.
5. The Barbier Prize in Botany to M. Duquesnel, for his memoir on "Crystallised Aconitine."
6. The Bordin Prize for a paper on "The part played by Stomata in the Functions of Leaves," was not awarded, and is withdrawn from competition; but a bonus was given to M. A. Barthelemy.
7. The Desmázières Prize was not awarded either, but a bonus of 500 francs was given to M. Husnot for various works on the Cryptogamic Flora of Martinique.
8. The Bréant Prize.—A sum of 5,000 francs, the whole annual interest of the legacy, was awarded to M. Chauveau for his experiments upon Virulent Virus and Maladies.
9. The Montyon Prizes in Medicine and Surgery.—Two prizes of 2,500 francs were awarded—(1) To M. Grehant for his Physiological and Medical Researches on the Respiration of Man; (2) To M. Blondlot, for a series of memoirs concerning the disputed questions of Medicine, Chemistry, and Physiology. Three sums of 1,500 francs each were awarded—(1) To M. Bérenger-Féraud for his work entitled "Treatise on the Direct Union of Osseous Fragments in Fractures;" (2) to M. Duclout for his work entitled "Account of three cases of Vesico-vaginal fistula," &c; (3) To M. Leon Colin for his Treatise on Intermittent Fevers. Honourable mention was made of (1) M. Raimbert, (2) M. Bucquory, (3) M. Hajem, (4) MM. Krishaber and Peter.
10. The Godard Prize to Mr. J. Jolly for his work on Cancer of the Prostate; honourable mention being made of M. Puech.
11. The Montyon Prize in Experimental Physiology was divided between M. Chantran for his Observations on the Natural History of Crabs, and M. A. Gris for his Memoir on the Pith of Ligneous Plants. Honourable mention was given to M. Mehay for his Essay on Beet-Root Sugar, and a bonus to MM. Chéron and Gonjon for their Researches on the Functional Properties of the Nerves and Muscles during the intra-uterine life.
12. The Montyon Prize for Works, &c., bearing on unhealthy occupations. Of this, 2,500 francs were awarded to M. Goldenberg for the methods adopted by him for securing the healthiness of his Manufactories. A bonus of 2,000 francs was given to Mdlle. C. Garcin and to M. Adam for their Automatic Sewing Machine; and a similar sum to M. Louvel for his process of preserving grains *in vacuo*.
13. The Tremont Prize was awarded in 1869 to M. Le Roux, who holds it for three years.
14. The Laplace Prize was awarded to M. L. A. E. Sauvage, dux in 1870 of the Polytechnic School, and who has entered the School of Mines.

MRS. SOMERVILLE

MARY SOMERVILLE (born Fairfax), long ago known for her scientific researches and long well known for her popular and educational scientific works, died in the neighbourhood of Naples, where she has lived for some years, on Friday, November 29, aged nearly 92 years, having been born on December 26, 1780. She belonged to a good Scotch family, her father having been the late Vice-Admiral Sir William George Fairfax, was a great reader, learned Euclid surreptitiously while quite a girl, and at the same period got up a knowledge of Latin in order to be able to read Newton's *Principia*, and was educated at a school in Musselburgh, near Edinburgh.

Her first important contribution to science was made in 1826, when she presented to the Royal Society a paper on the magnetising powers of the more refrangible solar rays, the object of which was to prove that these rays of the solar spectrum have a strong magnetic influence. This paper led to much discussion, which was not set at rest till the researches of Riess and Moser showed that the action upon the magnetic needle was not caused by the violet rays.

Mrs. Somerville's first work of any extent was her "Mechanism of the Heavens" (1831), written at first at the request of Lord Brougham, as one of the series of publications by the Society for the Diffusion of Useful Knowledge. As, however, the work was on too large a scale, and, according to Sir John Herschel, to whom the MS. was submitted, as it was written for posterity, and not for the class whom the society designed to instruct, it was published as an independent work, eliciting from all quarters the highest encomiums, especially as being the work of a woman. It was founded to some extent on La Place's treatise, though the authoress exercised her own judgment in the acceptance or rejection of his theories.

Her next work "On the Connection of the Physical Sciences," was published in 1834, and was referred to by Humboldt as "the generally so exact and admirable treatise."

In 1848 appeared the work by which, perhaps, she is most generally known, her "Physical Geography," which, along with some of her other works, has passed through many editions, been reprinted frequently in America, and translated into several foreign languages. Notwithstanding the numerous works on the same subject that have since appeared, Mrs. Somerville's book still holds place as a first authority, even with the initiated.

In 1869 appeared her last work, "On Molecular and Microscopic Science," which, to quote a writer in the *Edinburgh Review*, "contains a complete conspectus of some of the most recent and most abstruse researches of modern science, and describes admirably not only the discoveries of our day in the field of physics and chemistry, but more especially the revelations of the microscope in the vegetable and animal worlds." The fact that Mrs. Somerville was close on her 90th year when she published this work, in which is contained a *résumé* of the most interesting results of recent scientific investigations, may give one some idea of the undying vigour and clearness of her mind, as well as of her intense love of science.

So long ago as 1835 Government recognised Mrs. Somerville's great merits, by bestowing upon her a literary pension of 300*l.*; and in the same year she was made an honorary member of the Royal Astronomical Society, the only other lady on whom this honour was conferred having been Miss Caroline Herschel. The Geographical Society awarded Mrs. Somerville the Patron or Victoria Medal in 1869, and about thirty years earlier the Fellows of the Royal Society subscribed for her bust, which was executed by Chantrey, and now adorns the Society's library. She certainly deserved all the honours she obtained, for during her long life she has done very much to raise the standard of scientific text-books, and to spread among general readers the accurate results of scientific research.

Dr. William Somerville was his wife's second husband, her first husband having been Captain Greig, a naval officer, fond of mathematics, and who took pleasure in giving his wife instruction in his favourite subject, thus probably giving her mind a bent towards science which has led to important results.

NOTES

ONE of the most cheering Ministerial outcomes that we have read for a long time is to be found in Mr. Gladstone's speech, on Tuesday, at the Society of Biblical Archæology, an outcome which indicates, we take it, on the part of the Government, that the lamentable condition of research in England has at length forced itself upon them, and that the policy which has done such an infinity of harm, and the fruits of which we are reaping, is at length to be reversed. In the speech to which we refer Mr. Gladstone said :—"I do not at all deny that many fields of inquiry have been so much widened and deepened of late years, that it is both becoming and proper for the Government from time to time, according to circumstances and occasions, to take part in, and give encouragement and assistance to, those things, many of which indeed cannot be prosecuted without that assistance." The paper read at the meeting to which we refer was one by Mr. G. Smith on a Chaldean account of the Deluge which he has recently deciphered. This communication was of such high importance that we hope to be able to refer to it at length next week.

The next meeting of the British Association for the Advancement of Science will be held at Bradford, not on September 19, 1873, as was fixed at the Brighton meeting, but for the convenience of many who have objected to the date, a fortnight earlier than that time. The Vice-Presidents appointed are Earl Rosse, Lord Houghton, Mr. W. E. Forster, M.P., and the Mayor of Bradford (Mr. Thompson). At Bradford an executive committee of sixteen persons, and also a larger general committee have, as usual, been appointed to prepare for the next meeting of the Association, and a public subscription, which is not to be less than 4,000*l.*, has been opened, for the purpose of defraying the estimated expenses in connection with the visit of the Association to the town. Of this sum 1,500*l.* will be required for the erection of a temporary building as a reception room. At a meeting held the other night 1,000*l.* were contributed on the spot, including 250*l.* by the Mayor.

At the recent second M.B. examination at the University of London, the Scholarship and Gold Medal in Medicine were awarded to Mr. B. N. Dalton, of Guy's Hospital, the Gold Medal in Medicine to Mr. W. Ottley, of University College, the Scholarship and Gold Medal in Obstetric Medicine to Mr. Robert Eardley Wilmot, of King's College, the Gold Medal in Obstetric Medicine to Mr. W. C. Greenfield, of University College, the Gold Medals in Forensic Medicine to Messrs. M. Harris, of Guy's Hospital, and W. Ottley, of University College.

The Brakenbury Natural Science Scholarship at Balliol College, Oxford (80*l.* per annum for four years), has been awarded to Mr. R. B. Don, of Clifton College. No fewer than four other scholarships in Natural Science have already been gained during the present year by boys from Clifton College, viz., two at St. Peter's College, Cambridge, one at Christ College, Oxford, and one at Magdalen College, Oxford.

Vice-Chancellor Bacon has decided that the conditions of the legacy under which sums of money were left by the late Mr. James Yates to endow the Professorship of Mineralogy and Geology at University College, and to found a Professorship of Archæology at the same college, have not been fulfilled, and that the legacies have therefore reverted to the heir-at-law of Mr Yates.

In accordance with the anticipation we have already expressed, Dr. Macalister has been chosen to fill the newly-founded chair of Comparative Anatomy at Trinity College, Dublin. Dr. Macalister continues to hold the Professorship of Zoology in the University of Dublin.

Mr. J. A. Wanklyn has, according to the *Chemical News*, become a candidate for the Chemical Prælectorship at Cambridge.

Mr. E. G. Pitt has been appointed Medical Officer of the south district of St. George's-in-the-East.

Mr. Bass has presented Derby with 5,000*l.* towards the erection of a free library.

A Madame de Perinot has left to the French Academy of Sciences a legacy of 20,000 francs for the foundation of a prize, to be awarded every two years, for the purpose of assisting astronomers and encouraging astronomical researches.

The two Actonian prizes of 105*l.* have been awarded by the Managers of the Royal Institution to the Rev. George Henslow and to Mr. B. Thompson Lowne, for "Essays on the Theory of the Evolution of Living Things."

The Baroness Burdett Coutts' prize for the best essay on the Isochronism of the Balance-spring was divided by the adjudicators equally between Mr. Palmer, of Leominster, and Mr. Moritz Immisch, of Regent Street, neither taking precedence of the other.

It is satisfactory to learn that 116 citizens of New York have lately tendered to Mr. B. Waterhouse Hawkins an expression of their sympathy with him in his grief at the loss of his models of the gigantic fossil reptiles of North America, which were broken to pieces and carted off as rubbish by order of certain unenlightened officials of the public parks, as mentioned in Nature some time ago. Mr. Hawkins has presented some casts of the pelvic and other bones of *Hadrosaurus* (one of the most interesting of these restorations) to the Museum of the Royal College of Surgeons.

The new Medical Microscopical Society will meet at 8 P.M. on December 6, in the college dining hall, St. Bartholomew's Hospital, to sanction rules, elect officers, and receive names of intending members, &c.

Messrs. L. Reeve and Co. announce a new and important part of Bentham and Hooker's "Genera Plantarum" at the commencement of the new year. It will include Dipsacaceæ, Valerianaceæ, Compositæ, and Rubiaceæ.

We have received from Mr. Quaritch, of Piccadilly, a list of very valuable books he has for sale from the libraries of the late Dr. Robert Wright, F.R.S. late of Madras, of the late Prof. Babbage, of the late Mr. G. R. Gray, F.R.S. of the British Museum, and the library of an architect.

The official Report of the Proceedings of the Meteorological Conference at Leipzig in August last will appear in the Journal of the Austrian Meteorological Society, and is now in the press. A translation is being prepared by Mr. Robert H. Scott, and will be issued under the authority of the Meteorological Committee as soon as possible after the appearance of the German original.

We have received the first number of the *Telegraphic Journal*, whose expected appearance we announced some time ago, and to judge from the prospectus to the first issue, it promises to perform good services to the scientific and industrial department with which it is connected. From one paper we learn that the total number of marine cables laid is 213, measuring 43,783½ miles.

We have received from the United States Government copies of their official tri-daily weather-map and bulletin, containing the result of meteorological observations taken simultaneously at about eighty stations.

We learn from the *Photographic News* that Dr. Vogel, the President of the Berlin Society for the Advancement of Photography, and instructor in the art at the Royal Industrial College, has been made a Professor. Thus we have the first instance of the appointment of a Professor of Photography, and we heartily join the German photographers in their congratulations on the chair being so worthily filled. Dr. Vogel is about to publish a photographic dictionary.

We learn that Part xi. of "Reliquiæ Aquitanicæ" is in the press. This serial work, descriptive of the Caves of Perigord and their contents, has been interrupted of late by the death of M. E. Lartet and the disturbances in France. The executors and friends of the late Henry Christy are proceeding with the work as expeditiously as possible, but do not expect to produce quite as many parts as originally contemplated.

The *School Board Chronicle* tells us that an international college such as appears to have been the ideal of Mr. Stuart Mill has existed for some time in the Canton of Zurich. This is the Institution Breidenstein, in which there are at present as many as eighty-eight pupils, representing fourteen different nations from the two hemispheres. These scholars speak nine different languages between them.

We have received the last three numbers of the *Horological Journal*, and, judging from its contents, it seems well calculated to accomplish one of its chief purposes, to spread a knowledge of the scientific principles upon which the art of watch and clock making is founded. It well deserves the support of all those for whose benefit it is intended.

Considerable changes, says the *Quarterly Meteorological Journal*, are in progress in the meteorological organisations of various countries. In France, M. Jules Simon has reversed the action of the Imperial Government, and placed the entire meteorological system under the Observatory of Paris. The Observatory of Montsouris, which C. Ste.-Claire Deville had established with much care, has been placed under the Observatory, and most of the meteorological work of the latter establishment has been transferred to it. The *Bulletin International* is now dated from Montsouris, but the series of observations at the Paris Observatory has not been suspended. M. C. Ste.-Claire Deville has been appointed Inspector-General of all the French Meteorological Stations, except those in connection with the telegraphic system. In Denmark, Captain N. Hoffmeyer has been placed at the head of the newly organised Institute. In Sweden, the intention of the Government to establish a central Institute in Stockholm in the year 1873 is announced, and the Observatory at Upsala is to be the central station. In Berlin arrangements are reported to be in progress for the founding of a more complete meteorological organisation than that now existing, which is of old date, and is in connection with the Statistical Bureau.

Harper's Weekly announces the death, at Reading, Pennsylvania, at the age of fifty-six, of Mr. William M. Baird, a gentleman who was much interested in natural history, and especially in ornithology. Mr. Baird, while residing at Carlisle, Pennsylvania, commenced in 1838 a collection of the birds of the county, in which he was assisted by his younger brother, Prof. S. F. Baird, of the Smithsonian Institution; and the two carried on their labours in common for many years, during which time they published conjointly descriptions of two new species of small fly-catchers discovered by them in the vicinity of Carlisle, as also a list of the birds of Cumberland County. Having adopted the profession of the law, Mr. William Baird was obliged to give up his active labours in ornithology, and the work was continued by his brother, who, on receiving an appointment in connection with the Smithsonian Institution at Washington, carried to it the conjoint collection, which formed, in a measure, the basis of the magnificent series of North American birds in the institution, and which has served as the material for so much research on the part of naturalists in America and other countries.

On November 26, the first Annual General Meeting of the National Union for improving the Education of Women of all classes was held at the rooms of the Society of Arts, Lord Lyttelton in the chair. The two principal resolutions were that "the meeting, feeling the inadequacy of the supply of good schools for girls, pledges itself to promote the establishment of such schools, and also to aid all measures for extending to women the means of higher education beyond the school period of life; and that the meeting, feeling the necessity of thorough training for teachers, and of some recognised test of their efficiency, pledges itself to promote measures for the attainment of those objects." The grand principle upon which the Union is founded, is "that the human faculties and intellect have been impartially given, and belong in equal degree to both men and women."

We notice that a new method of lighting gas has been invented by Mr. J. Billington Booth, of Preston, the working of which was shown by him the other night in that town. By this method the whole of the street lamps can be lighted simultaneously from any distance. The apparatus constituting the invention, the *Preston Chronicle* tells us, looks like a moderately-sized globular inkstand of glass, surmounted by a tube of the same material, with a metallic top; by screwing off the burner it can be very easily attached to any lamp, chandelier pipe, or ordinary gas-jet. The base or globular portion is filled with a deep red-coloured liquid, so cheap that three pennyworth will serve the lamp for a year. Over the liquid and within the glass tube there is a plate of zinc, with a piece of graphite or gas coal, and between these and a thin coiled platinum wire, fixed over the cup of the general vessel, into which a gas-burner is inserted, galvanic communication is obtained. Ignition is thus effected: A pipe is screwed to the top of the gaspipe; pressure on the gas in this pipe causes a simultaneous depression upon the chemical solution which occupies a lower level in two side tubes; the gas occupies the vacuum caused by the displaced liquid, and then ascends to a chamber connected with the burner, while the displaced liquid is pressed into two side-tubes effecting contact with the zinc and graphite, and generating galvanic activity. This is communicated to the platinum wire, and excites its catalytic power; the wire being then exposed to the ascending jet of gas, immediate ignition takes place.

An invention by Mr. J. A. H. Ellis, of Boston, U.S., is described in the *Industrial Monthly*, by means of which, it is said, enormous amount of heat wasted in exhaust steam is profitabl utilised. The method consists in passing the exhaust steam from an ordinary steam-engine through the tube of a boiler filled with the bisulphide of carbon (which boils at 110° Fah.), in the same way that smoke and the products of combustion are passed through a steam-boiler filled with water. The result is, according to our authority, that the bisulphide boiler will be rapidly heated up to 212° Fah., the resulting vapour being able to keep an engine going, and do a large amount of work, if the supply of exhaust steam is sufficient. By this means one large steam-engine might keep not only itself going, but supply the necessary power to a number of neighbouring small ones, the latter being thus able to dispense with fire and all attendance. The *Industrial* says the method is actually at work at Fitchburg, Massachussetts.

From the *British Medical Journal* we learn that at the last examination in anatomy held at the University of Berlin, two candidates alone, amongst the thirteen who presented themselves, obtained the notice "good." One of these was a Japanese medical student called Sasumi Satoo. The intellectual labour and the amount of perseverance necessary to gain this success will be appreciated when it is known that in November 1869, the time when Sasumi Satoo was sent by his father to Berlin, he did not even know the German characters. The first five months he applied himself exclusively to the study of German, and he acquired in the remaining six months the knowledge of all the subjects, including Latin, which were required for the first examination. The father of Sasumi is the principal physician to the Mikado, and enjoys in Japan great celebrity as an operator.